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AUTHOR Snyder, Vivian
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ABSTRACT

Three methods for studying college textbook chapters were compared, with 50 college special admissions students as subjects. Utilizing a counterbalanced design, students enrolled in a study skills course were given instruction in three study techniques: SQ3R, outlining, and underlining. The SQ3R method (Francis Robinson, 1946) consists of five steps: gaining an overall orientation of what will be read, turning each heading throughout the chapter into a question, reading the chapter to answer the questions, reciting in the student's own words the answer to the question, and summarizing or writing the main points of the chapter. Participants applied the technique to three college textbook chapters provided by the researcher. Recall performance was measured at the end of each of 3 weeks, utilizing an objective test measuring the chapter information. Analysis of variance for Latin-squares with repeated measures indicated a significant difference between mean scores on the posttests. Pairwise post-hoc analyses using the Scheffe multiple comparison procedure indicated that the mean recall performance for the outlining method was significantly different than the other two methods. Mean recall performance was higher for outlining than for the other methods. There was no statistical difference between the means of the underlining and the SQ3R posttests. (Author/SW)

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Effects of Study Techniques on Developmental College Students' Retention of Textbook Chapters

Vivian Snyder

Southern Illinois University, Carbondale

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Abstract

Utilizing a counterbalanced design, 50 college special admissions students from three sections of a study skills course at a large midwestern university were given instruction in three study techniques: SQ3R, outlining, and underlining. Subjects applied the technique to three college textbook chapters, provided by the researcher. Recall performance was measured at the end of each of three weeks, utilizing an objective test measuring the chapter information. Analysis of variance for Latin-squares with repeated measures indicated a significant difference between mean scores on the posttests, $F(2, 96) = 7.74$, $p < .001$. Pairwise post-hoc analyses using the Scheffé multiple comparison procedure indicated that the mean recall performance for the outlining method was significantly different than the other two methods. Mean recall performance was higher for outlining than for the other methods. There was no statistical difference between the means of the underlining and the SQ3R posttests.

Effects of Study Techniques on Developmental College Students' Retention of Textbook Chapters

As students advance from high school to college, their reading and study requirements become more and more difficult. Students must be able to comprehend these more difficult materials, as well as learn and recall key concepts and ideas presented in text, in order to perform well on exams. Special admissions students are under an additional burden. These students are usually admitted to college with lower high school grades and entrance test scores than those admitted by traditional procedures. Special admissions students may also have lesser developed study strategies than their counterparts admitted through regular admissions procedures and may have a greater need for training in study strategies.

To fulfill the social responsibility that accompanies special admissions, many schools have established programs of supportive services to students. These developmental and support programs provide coursework in basic skills areas intended to compensate for inadequate preparation for college. Many programs attempt to provide training in the various study skills needed for college survival. One of these study skills traditionally taught to special admissions students is training in how to read and comprehend their textbooks. Quite often, the use of the study formulas is taught as a method of reading college textbooks. One of the most widely accepted formulas is the SQ3R method developed by Francis P. Robinson in 1946. Other similar formulas have been developed

since the SQ3R; and it, or a counterpart, usually appears in most how-to-study books available to teachers in developmental and support programs. Many noted reading specialists have endorsed the use of the SQ3R procedure with both secondary and postsecondary students (Graham, 1982; Pauk, 1974).

Briefly, the five steps to Robinson's SQ3R consist of the following: Step 1, Survey, in which the student glances over the headings, beginning and/or final summary paragraphs to gain an overall orientation of what he is about to read. Step 2, Question, involves turning each heading throughout the chapter into a question. Step 3, Read, has the student read the chapter to answer the questions he has written. It is meant to be an active search for answers. Step 4, Recite, requires the student to close the book and answer, in his own words, the question he has written for step 3. Steps 2, 3, and 4 are to be repeated with each successive heading until the entire lesson is completed. Step 5, Review, has the student check his memory by summarizing or writing the main points of the chapter.

Recently, the SQ3R method has some under attack. Johns and McNamara (1980) indicated that the superiority of the SQ3R method has not yet been demonstrated empirically, either by Robinson, or by other supporters, or by researchers studying SQ3R. Several recent investigations have shown the SQ3R to be no more efficient than other techniques. Donald (1967), Niple (1968), and Scappaticci (1977) found that the SQ3R method was no more effective than the student's own best method of study. Other researchers have compared the SQ3R method with other study

techniques and found either no differences between methods (McNamara, 1977) or that students utilizing the SQ3R method performed poorer than those utilizing other, more traditional, study techniques (Willmore, 1966). The small body of research involving SQ3R does not seem to support its use. Yet it continues to be taught in study skills courses. Johns and McNamara (1980) suggest more research to determine SQ3R's effectiveness, utilizing a counterbalanced design, so that each student employs each of the methods being compared.

The purpose of this investigation was to compare the SQ3R method with two other study methods, outlining and underlining, for studying college textbook chapters by college special admissions students.

Method

Subjects

Participants (N=50) were special admissions students who matriculated at a large midwestern university Fall Semester, 1982 and were enrolled in a study skills course during their first semester at the university. The special admissions program admits those students who do not meet the regular admission criteria for the university. These students participate in the activities at the Center for Basic Skills, which was designed to provide special admissions students with the opportunity to attend college and to receive academic support in basic cognitive skills.

Subjects were enrolled in three different sections of the study skills course, all taught by the researcher. Class sizes were

approximately 20 each, but only subjects who participated in all three training sessions and all three testing sessions were included in the study. If a subject missed one or more of the training or testing sessions, he was dropped from the study, but allowed to make up the work for his class. Subjects were not aware that they were participating in a study, and were therefore unaware that they were included in any statistical analysis.

Materials

Three different social science chapters were selected for the experiment, chosen to resemble traditional college textbook chapters containing subheadings. The chapters were of approximate equal length and level of difficulty and were taken from an edited book of readings designed for use in reading and study skills courses (Maxwell, 1969).

For each chapter, a 15-item multiple-choice test was constructed. Reading faculty from the Center for Basic Skills evaluated the tests to determine the similarity of question type and the difficulty levels of items.

Design

Since all subjects were to be entered into all three treatments during the three-week experimental period, and random assignment was not possible, a counterbalanced design, as suggested by Johns and McNamara (1980) and Campbell and Stanley (1963) was selected for this study. The design is illustrated in Table 1.

Insert Table 1 about here.

Procedure

The entire experimental process took three weeks, utilizing two class sessions from each week. During each week's initial session, each class was given instructions in the study technique to be presented that week. The SQ3R technique, as developed by Robinson, and the more traditional techniques of outlining and underlining were explained by the researcher. Instructional sessions included having students practice the technique. For example, in the case of the SQ3R procedure, students practiced making up questions from chapter headings. All subjects were given ample opportunity to ask questions and get clarification, with the remainder of the hour used to practice the technique. They were told that they would have a test on the material the next class session. All materials were collected by the researcher at the end of each training session. Evidence that students actually utilized each technique was in the collected materials. Students were required to turn in at the end of the hour: either an outline, the chapter with underlinings, or their SQ3R questions, answers, and summary, depending on the particular experimental treatment for that class.

Recall performance was measured at the end of each of the three weeks, utilizing the 15-item multiple choice test over the chapter information. Subjects were not told their scores on any of the tests until after the entire three-week experimental period had ended.

Results

An analysis of variance for Latin-squares with repeated measures was utilized to analyze the test scores. Table 2 summarizes the mean test scores of each of the classes for each of the three study methods.

Insert Table 2 about here.

The analysis indicated that a difference did exist between mean scores on the posttests, $F(2, 96) = 7.74$, $p < .001$. Pairwise post-hoc analyses using the Scheffé procedure indicated that the mean score of the test on the outlining method was significantly different than the other two methods. Mean recall performance was higher for outlining than for the other methods. There was no statistical difference between the means of the underlining and the SQ3R posttests.

Discussion

The results of this investigation appear to support the findings of other researchers who have found the SQ3R to be of equal or less efficiency than other study methods (Donald, 1967; McNamara, 1977; Niple, 1968; Willmore, 1966).

It should be pointed out, however, that the study techniques and environment in this investigation may not reflect actual study conditions which might be carried out by students who are preparing for a test. Anderson (1978) defines studying as criteria-related and self-directed. Under the circumstances of the present investigation, the activity was teacher-directed, not self-directed, even though the subjects were told

that they were to be tested on the material. They were not, however, given a choice as to how they were to study the material. Under more realistic conditions, the student would be the prime agent in deciding when and how the study sessions should proceed.

Graham (1982) suggests that one shortcoming of the SQ3R may be that the method is only applicable with a traditional textbook format (containing subheadings). Consequently, materials organized in this format were chosen for the present investigation. Other studies comparing types of materials may help answer the question of SQ3R's effectiveness under other textual conditions.

Another criticism of SQ3R is that it may represent artificial steps. Anderson (1978) contends that studying is not seen as a series of mechanical steps, but rather an interactive process involving a student's prior knowledge, textbooks, study guides, etc.

Based on the results of this and other investigations, the SQ3R study method does not appear to be more effective than traditional study techniques. Because of the complexity, and the limited applicability of the technique, students may not be motivated to use the SQ3R method. Practitioners would be well advised to stress the use of more traditional techniques for the independent study of classroom textbooks. Finally, SQ3R needs to be investigated under other circumstances, utilizing a variety of textual materials, comparing various levels of student abilities, and searching for other possibilities for application of the method.

Table 1

Counterbalanced Design Utilized in the Present Study

	Week 1	Week 2	Week 3
Class 1 (n=21)	X_1O_1	X_2O_2	X_3O_3
Class 2 (n=14)	X_2O_2	X_3O_3	X_1O_1
Class 3 (n=15)	X_3O_3	X_1O_1	X_2O_2

NOTE: X_1 = SQ3R experimental treatment

X_2 = Outlining experimental treatment

X_3 = Underlining experimental treatment

O_1 = Posttest, SQ3R

O_2 = Posttest, Outlining

O_3 = Posttest, Underlining

Table 2

Mean Posttest Scores of Each Class and of Total Sampel for Each Treatment Condition

(Maximum Score = 15)

	Treatment Condition		
	SQ3R	Outlining	Underlining
Class 1 (n=21)	6.24	7.19	6.38
Class 2 (n=14)	6.71	7.07	6.50
Class 3 (n=15)	5.53	7.87	6.07
All Ss (N=50)	6.16	7.36	6.32

References

Anderson, T.H. (1978). Study skills and learning strategies. (Report No. 104). Urbana, IL: University of Illinois, Center for the Study of Reading. (ERIC Document Reproduction Service No. ED 161 000).

Campbell, D.T., & Stanley, J.C. (1963). Experimental and quasi-experimental designs for research. Boston: Houghton Mifflin.

Donald, M. (1967). The SQ3R method in grade seven. Journal of Reading, 11, 33-35, 43.

Graham, S. (1982). Comparing the SQ3R method with other study techniques for reading improvement. Reading Improvement, 19, 44-47.

Johns, J.L., & McNamara, L.P. (1980). The SQ3R study technique: A forgotten research target. Journal of Reading, 23, 705-708.

Maxwell, M.J. (1969). Skimming and scanning improvement. New York: McGraw-Hill.

McNamara, L.P. (1977). A study of the cloze procedure as an alternative group instructional strategy in secondary school American government classes. Dissertation Abstracts International, 39, 216A. (University Microfilms No. DDK 78-11183).

Niple, M. (1968). The relationship of different study methods to immediate and delayed comprehension. Dissertation Abstracts, 29, 1790A. (University Microfilms No. 68-15365).

Pauk, W. (1974). How to study in college (2nd ed.). Boston: Houghton Mifflin.

Robinson, F.P. (1946). Effective study. New York: Harper and Brothers.

Scappaticci, F.T. (1977). A study of SQ3R and select and recite reading and study skills methods in college classes. Dissertation Abstracts International, 38, 1929A. (University Microfilms No. DCJ 77-20723).

Willmore, D.J. (1966). A comparison of four methods of studying a college textbook. Dissertation Abstracts, 27, 2413A. (University Microfilms No. 67-00888).